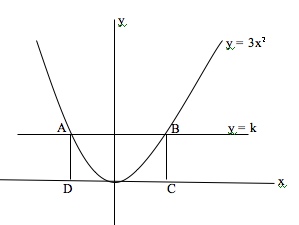
1. The line y = k intersects the graph of y = 3x2 in points A and B. Points C and D are on the x-axis and ABCD is a rectangle. Below is a rough sketch of what this looks like.

If the area of ABCD = 128/9 sq. units, then what is the value of k?

NO CALCULATORS ALLOWED! CLEARLY EXPLAIN YOUR THINKING!



2. Now consider the quadratic f(x) = 4(x + 4)2. The graph intersects the line y = k, k > 0, in 2 distinct points, B and C. The rectangle, whose base is on the x-axis and 2 of whose vertices are B and C, has an area of

64 sq units. Determine the value of k.

Roughly sketch the situation. Then, determine k without a calculator, and be sure to explain your thinking!